

§ 1065.315

reference meter's measurement axis and perpendicular to the dynamometer's rotational axis.

§ 1065.315 Pressure, temperature, and dewpoint calibration.

(a) Calibrate instruments for measuring pressure, temperature, and dewpoint upon initial installation. Follow the instrument manufacturer's instructions and use good engineering judgment to repeat the calibration, as follows:

(1) *Pressure.* We recommend temperature-compensated, digital-pneumatic, or deadweight pressure calibrators, with data-logging capabilities to minimize transcription errors. We recommend using calibration reference quantities that are NIST-traceable within 0.5% uncertainty.

(2) *Temperature.* We recommend digital dry-block or stirred-liquid temperature calibrators, with datalogging capabilities to minimize transcription errors. We recommend using calibration reference quantities that are NIST-traceable within 0.5% uncertainty.

(3) *Dewpoint.* We recommend a minimum of three different temperature-equilibrated and temperature-monitored calibration salt solutions in containers that seal completely around the dewpoint sensor. We recommend using calibration reference quantities that are NIST-traceable within 0.5% uncertainty.

(b) You may remove system components for off-site calibration. We recommend specifying calibration reference quantities that are NIST-traceable within 0.5% uncertainty.

EFFECTIVE DATE NOTE: At 73 FR 37305, June 30, 2008, §1065.315 was amended by revising (a)(2), effective July 7, 2008. For the convenience of the user, the revised text is set forth as follows:

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(a) * * *

(2) *Temperature.* We recommend digital dry-block or stirred-liquid temperature calibrators, with data logging capabilities to minimize transcription errors. We recommend using calibration reference quantities that are NIST-traceable within 0.5% uncertainty. You may perform the linearity verification for temperature measurement systems with thermocouples, RTDs, and

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thermistors by removing the sensor from the system and using a simulator in its place. Use a NIST-traceable simulator that is independently calibrated and, as appropriate, cold-junction compensated. The simulator uncertainty scaled to temperature must be less than 0.5% of T_{\max} . If you use this option, you must use sensors that the supplier states are accurate to better than 0.5% of T_{\max} compared with their standard calibration curve.

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FLOW-RELATED MEASUREMENTS

§ 1065.320 Fuel-flow calibration.

(a) Calibrate fuel-flow meters upon initial installation. Follow the instrument manufacturer's instructions and use good engineering judgment to repeat the calibration.

(b) You may also develop a procedure based on a chemical balance of carbon or oxygen in engine exhaust.

(c) You may remove system components for off-site calibration. When installing a flow meter with an off-site calibration, we recommend that you consider the effects of the tubing configuration upstream and downstream of the flow meter. We recommend specifying calibration reference quantities that are NIST-traceable within 0.5% uncertainty.

§ 1065.325 Intake-flow calibration.

(a) Calibrate intake-air flow meters upon initial installation. Follow the instrument manufacturer's instructions and use good engineering judgment to repeat the calibration. We recommend using a calibration subsonic venturi, ultrasonic flow meter or laminar flow element. We recommend using calibration reference quantities that are NIST-traceable within 0.5% uncertainty.

(b) You may remove system components for off-site calibration. When installing a flow meter with an off-site calibration, we recommend that you consider the effects of the tubing configuration upstream and downstream of the flow meter. We recommend specifying calibration reference quantities that are NIST-traceable within 0.5% uncertainty.

(c) If you use a subsonic venturi or ultrasonic flow meter for intake flow